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sis; the second part, to the occurrence, preparation, properties and reactions of the sugars and their allied derivatives.

Part I., which covers about 500 pages, discusses the sampling of sugars and sugar products; determination of moisture; densimetric analysis; the refractometer and its applications; theory and practical application of polariscopes; the specific rotation of sugars; methods of simple and invert polarization; qualitative methods for the identification of sugars, and methods for the analysis of sugar mixtures.

Part II., in some 260 pages, deals with the formation of sugars in nature, and their classification; the mono-, di-, tri- and tetrasaccharides, the amino-sugars, cycloses and the sugar alcohols and sugar acids.

The sugar-tables, which, for convenience, are grouped together in an appendix of 100 pages, are paged independently of the rest of the volume. They may therefore be bound separately for laboratory use.

An idea of the painstaking care with which this work has been prepared may be gained from the fact that the index alone fills 69 pages. The style in which the book is written is admirably clear and concise; the merits and demerits of the various methods given are objectively and dispassionately stated; the methods endorsed by the International Commission for Uniform Methods of Sugar Analysis—of which Commission Dr. Browne is a member—receive full consideration throughout. The text is illustrated by a number of well-chosen and well-executed cuts, and the general excellence of the typography and make-up of the book reflect great credit on the publishers.

Dr. Browne is certainly entitled to the most cordial appreciation and congratulations of his fellow-workers on this classic contribution to their store of knowledge.

F. G. WIECHMANN

*Popular Guide to Minerals.* By L. A. GRATA-CAP. New York, D. Van Nostrand Company. 1912. 330 pages, 74 plates and 400 figures. Price \$3.00.

This book, as its name indicates, is intended chiefly for the general reader and student. It is designed largely to assist in the study and appreciation of the mineral collections to be found in our great museums. It is to be regretted that popular interest in minerals is by no means as widespread or as active to-day as it was twenty-five years ago and it is to be hoped, therefore, that this book may help to revive the study of minerals and to restore it to its proper place as one of the more interesting and popular branches of natural science.

The book contains a section on crystallography, followed by a discussion of the physical and chemical properties of minerals. The section devoted to the description of mineral species—in harmony with the purpose of the book—has been entitled, "Guide to Collections." An extensive history of the development of mineralogy follows and the book closes with a description of the fine Bement mineral collection which belongs to the American Museum of Natural History in New York City and of which the author of the book is curator.

The illustrations comprise first a series of more than seventy plates giving photographic reproductions of some of the finer and more striking specimens in the Bement collection. Mineral specimens offer many obstacles to successful reproduction in this way and nothing but praise can be said of the results achieved. It is to be regretted that the line figures used in the book, especially in its earlier sections, have not been reproduced as successfully.

W. E. FORD

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#### SPECIAL ARTICLES

##### ANTAGONISTIC ACTION OF ELECTROLYTES AND PERMEABILITY OF THE CELL MEMBRANE

1. The writer observed years ago that the newly fertilized eggs of *Fundulus* die in a  $5/8$  *m* NaCl solution without forming an embryo, while the addition of a very small but definite amount of a salt with a bivalent metal (with